# Dances with Robots: The Story of One Engineer, 112 Little Robots, and the Toys, Insects, and Star Wars Movies that Made it all Possible

The presentation starts with a lighthearted look at society's views on robots, Hollywood's portrayal of them, the current state of the art, and the future of the technology. Philosophical questions about the nature of intelligence are discussed, as they pose serious problems for the creation of artificially intelligent devices. The final conclusion? Robots are phenomenally stupid and we should be more concerned about the next asteroid strike than a robotic rebellion. In spite of this, robots are still useful, and swarms are the future of robotics. McLurkin motivates the need for swarms of robots, and explains the technology required to produce group behaviors on one hundred robots. Live robot demonstrations and video clips of the swarm in action punctuate the main points. The presentation concludes with an autobiographical sketch that traces the events, ideas, and toys that have influenced McLurkin's career. Starting with cardboard boxes and tape, moving through LEGO and video games, this high-energy slide show concludes with a behind-the-scenes look at the construction of the iRobot Swarm.

## Extreme Lesson Plans: Adventures in Technical Education

James McLurkin's teaching style can be summarized as follows: "What can I bring to class that will be so interesting that they won't even taste the science?"

This classic technique of bait-and-switch teaching can be especially helpful when introducing technical concepts in science and mathematics. The trick lies is in finding the right demonstration, real world application, or story to motivate the theory. This presentation pulls from McLurkin's lectures in physics, engineering, and computer science. The highlights of the presentation are on-stage demonstrations of BMX physics, a radio-controlled helicopter, and a small swarm of 15 robots. This presentation also has a mini-session of "Swarm School", to illustrate how complex concepts in distributed algorithms for multi-robot systems can be explained to high school students.

## Extreme Lesson Plans Workshop: Bringing More of You to Your Classroom

This workshop covers more of McLurkin's lesson plans in detail, featuring hovercraft piloting lessons, and a hands-on robot programming exercise. The focus of the workshop will be to develop Extreme Lesson Plans for as many of the participants as possible. Participants are encouraged to bring small demos or other artifacts representing their hobbies or interests.

## The End of the World and Other Misconceptions: The Truth About Robotics

A lighthearted look at society's views on robots, Hollywood's portrayal of them, the current state of the art, and the future of the technology. Famous movie robots are used as examples of dream systems. Biological systems provide examples of "robotic" systems that we are just beginning to understand, but cannot hope to duplicate. Philosophical questions about the nature of intelligence are discussed, as they pose serious problems for the creation of Artificial Intelligence. The end result: Robots are phenomenally stupid and we should be more concerned about the next asteroid strike than a robotic rebellion.

## "Engineering Creativity": Exercises for the Right Brain

McLurkin's unconventional approach to the creative design process is an inspiration to professionals of all disciplines. This presentation starts with examples from the far-reaching passions that have shaped McLurkin's career, including insects, LEGO, trains, and Star Wars. It continues with a tour through a gallery of brilliant design, sources of inspiration, and examples of exceptional creative thought, often found in the most common places. The conclusion looks at the "logistics of creativity" and leaves participants with ideas on how to structure their environment and plan their activities to enhance creative thought.

## Playing Engineer: The Toys of the Trade

Invention and Play often go hand-in-hand. During this presentation McLurkin takes the audience through an inside look at the kind of play that has shaped his inventiveness, from kindergarten to the present day.